

**Remarks by Dr. Raymond L. Orbach  
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*Draft as Prepared*

Hello, this is Ray Orbach, Under Secretary for Science at the United States Department of Energy. It is the mission of the Department of Energy to advance the national, economic, and energy security of the United States; to promote scientific and technological innovation in support of that mission; and to ensure the environmental cleanup of the national nuclear weapons complex.

To achieve these goals, the Department of Energy funds through the Office of Science more than 40 percent of basic research in the physical sciences in the United States. We do this with the understanding that searching for new knowledge of the fundamental properties of our universe will fuel economic and intellectual leadership for our nation and improve the global human and environmental condition.

Our Department is the source for construction and operation of the large-scale research facilities and instruments that we build and operate at 17 national laboratories around the country, and several facilities of strategic partnership abroad. From this infrastructure base, we have helped contribute to America's leadership in the key scientific fields that will dominate this century. These are the fields of biotechnology, nanotechnology, material science, and high-speed computation, of high energy, nuclear, and fusion

research. Department of Energy accomplishments are exemplified by more than 80 Nobel Laureates affiliated with the Department of Energy and its predecessor agencies.

Our agenda is broad, but I would like to take this opportunity to tell you about President Bush's *Advanced Energy Initiative*, which provides for a 22-percent increase in funding for clean-energy technology research at the Department of Energy.

President Bush's goal is to change the way Americans power our homes, automobiles, and places of work, and, without question, he knows that science is the key to understanding and harnessing the forces nature that will help us revolutionize the global energy economy.

For example, sunlight provides, by far, the largest of all carbon-neutral energy sources. More energy from sunlight strikes the Earth in one hour than all the energy consumed on our planet in one year. So we have a lot to work with. We are exploring a number of novel technologies in the Energy Department—solar to electric; solar to fuels—using solar energy to go directly to fuels; as well as solar to thermal conversions. This is just part of our strategy.

Fusion energy on Earth can mimic the processes that power our sun. Fusion energy promises unlimited, safe and clean electricity for the world. We are partnering with China, the European Union, India, Japan, Russia, and South Korea to start construction next year on the penultimate step toward a fusion-powered demonstration reactor, ITER, which will also be the first

fusion reactor that will produce more energy than it consumes. This will be the penultimate step toward an unlimited potential for generating electricity and hydrogen in an environmentally benign fashion using only deuterium, readily abundant in our oceans, and lithium, one of the most abundant elements on earth.

Other energy sources hold the promise of reshaping our transportation sector. Biofuels derived from plant cells, plant cell walls—they are otherwise known as cellulosic ethanol—could lead us from our current reliance on fossil fuels that power our vehicles to clean, new domestic energy sources that we believe could transform our entire economy.

These are breathtaking prospects. They are very doable, but they will be very difficult undertakings requiring long-term discipline and commitment of resources. Our Department is committed to their success, and the President is committed to providing the resources that we need to accomplish these goals. The Advanced Energy Initiative provides for research and development in all the areas I mentioned, and more.

Finally, I encourage you to support and engage in science as parents, teachers, students, and citizens. Please visit [www.science.energy.gov](http://www.science.energy.gov) to learn more about the many exciting opportunities that exist in science, and how we are rising to meet those challenges through programs like the Advanced Energy Initiative.

Thank you for your time.

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